

What is claimed:

1. A method of selecting at least one routing path between an access node and a gateway comprising:
  - the access node receiving over a plurality of channels, indicators from at least one upstream access node, the indicators providing information of selected upstream paths between each of the upstream access nodes and upstream gateways; and
  - the access node determining an optimal set of routing paths between the access node and at least one upstream gateway, based upon the indicators, the optimal set of routing paths including a combination of paths over multiple channels.
2. The method of claim 1, wherein the plurality of channels comprises transmission channels according to at least one of 802.11(a), 802.11(b), 802.11(g), 802.11(n), 802.16 transmission protocols.
3. The method of claim 1, wherein the access node determining an optimal set of routing paths comprises determining a path quality of the available paths, and selecting the optimal paths based upon a selection criterion.
4. The method of claim 3, wherein the selection criterion is based upon an information throughput of the routing paths.
5. The method of claim 3, wherein the selection criterion is based upon a number of hops of the routing paths.
6. The method of claim 1, wherein the optimal set of routing paths includes at least one of a plurality of possible routing paths.

7. The method of claim 1, wherein the optimal set of routing paths includes a combination of paths through multiple upstream access nodes.
8. The method of claim 1, wherein the indicators comprise beacons originating at the gateways.
9. The method of claim 8, wherein the beacons are retransmitted by the upstream access nodes after the beacons have been modified to include selected upstream routing information.
10. The method of claim 8, wherein the beacons comprise hop indicators that are incremented with each hop.
11. The method of claim 1, wherein selected upstream paths between each upstream access node and upstream gateways can include a combination of paths, over multiple channels.
12. The method of claim 1, wherein selected upstream paths between each upstream access node and upstream gateways are selected based upon path quality.
13. The method of claim 12, wherein the path quality is determined by an information throughput of the upstream paths.
14. The method of claim 12, wherein the path quality is determined by a number of hops included within the upstream paths.
15. The method of claim 1, further comprising the access node transmitting a modified indicator over a plurality of channels, the modified indicator including the optimal set of routing paths between the access node and the at least one upstream gateway.

16. The method of claim 1, further comprising:
  - sending a reverse beacon to the gateway; and
  - constructing a client tree in the gateway, wherein the gateway has at least one path including multiple channels to all clients.
17. A method of routing data packets through a wireless mesh network, the mesh network comprising at least one gateway and a plurality of access nodes, the method comprising:
  - each access node receiving over a plurality of channels, indicators from at least one upstream device;
  - if the at least one upstream device is an upstream access node, the indicators providing information of selected upstream paths between each of the upstream access nodes and upstream gateways; and
  - each access node determining an optimal set of routing paths between the access node and at least one upstream gateway, based upon the indicators, the optimal set of routing paths including a combination of paths over multiple channels.
18. The method of claim 17, wherein the plurality of channels comprises transmission channels according to at least one of 802.11(a), 802.11(b), 802.11(g), 802.11(n), 802.16 transmission protocols.
19. The method of claim 17, wherein the access node determining an optimal set of routing paths comprises determining a path quality of the available paths, and selecting the optimal paths based upon a selection criterion.
20. The method of claim 17, wherein the indicators comprise beacons originating at the gateways.

21. The method of claim 20, wherein the beacons are retransmitted by the upstream access nodes after the beacons have been modified to include selected upstream routing information.
22. The method of claim 17, wherein selected upstream paths between each upstream access node and upstream gateways can include a combination of paths, over multiple channels.
23. The method of claim 17, further comprising the access node transmitting a modified indicator over a plurality of channels, the modified indicator including the optimal set of routing paths between the access node and the at least one upstream gateway.
24. The method of claim 17, further comprising
  - sending a reverse beacon to the gateway; and
  - constructing a client tree in the gateway, wherein the gateway has at least one path including multiple channels to all clients.
25. An access node comprising:
  - a plurality of radios operable on a plurality of transmission channels, the radios receiving over a plurality of channels, indicators from at least one upstream access node, the indicators providing information of selected upstream paths between each of the upstream access nodes and upstream gateways; and
  - means for determining an optimal set of routing paths between the access node and at least one upstream gateway, based upon the indicators, the optimal set of routing paths including a combination of paths over multiple channels.
26. The method of claim 25, wherein the plurality of channels comprises transmission channels according to at least one of 802.11(a), 802.11(b), 802.11(g), 802.11(n), 802.16 transmission protocols.

27. The method of claim 25, wherein the access node determining an optimal set of routing paths comprises determining a path quality of the available paths, and selecting the optimal paths based upon a selection criterion.
28. The method of claim 25, wherein the indicators comprise beacons originating at the upstream gateways.
29. The method of claim 28, wherein the beacons are retransmitted by the upstream access nodes after the beacons have been modified to include selected upstream routing information.
30. The method of claim 25, wherein selected upstream paths between each upstream access node and upstream gateways can include a combination of paths, over multiple channels.
31. The method of claim 25, further comprising the access node transmitting a modified indicator over a plurality of channels, the modified indicator including the optimal set of routing paths between the access node and the at least one upstream gateway.
32. A mesh network comprising:
  - at least one gateway, each gateway transmitting beacons through a plurality of transmission channels;
  - a plurality of access nodes, each access node receiving beacons through at least one of the transmission channels, each access node selecting routing paths based upon path indicator information within the received beacons, the routing paths selected from the plurality of transmission channels, the selected set of routing paths including a combination of paths over multiple channels; and
  - a client, the client receiving beacons through at least one of the transmission channels from at least one of the access nodes.

33. The method of claim 32, wherein the plurality of channels comprises transmission channels according to at least one of 802.11(a), 802.11(b), 802.11(g), 802.11(n), 802.16 transmission protocols.
34. The method of claim 32, wherein the access node determining an optimal set of routing paths comprises determining a path quality of the available paths, and selecting the optimal paths based upon a selection criterion.
35. The method of claim 32, wherein the indicators comprise beacons originating at the gateways.
36. The method of claim 35, wherein the beacons are retransmitted by the upstream access nodes after the beacons have been modified to include selected upstream routing information.
37. The method of claim 32, wherein selected upstream paths between each upstream access node and upstream gateways can include a combination of paths, over multiple channels.
38. The method of claim 32, further comprising the access node transmitting a modified indicator over a plurality of channels, the modified indicator including the optimal set of routing paths between the access node and the at least one upstream gateway.